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ABSTRACT

The study investigated the impact of participation in a creativity instructional program on measures of creative thinking and problem solving with 49 learning disabled intermediate level students and a control group of 24 nondisabled students. The Purdue Creative Training Program was used as the independent variable. Analysis of verbal fluency, verbal flexibility, and total verbal creativity revealed the experimental group to be significantly higher in posttest scores than control Ss. Among seven implications for further research were the need to conduct longitudinal studies on the efficacy of creativity training with learning disabled students and to extend the training to different problem solving criteria. (PHR)

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The Impact of Creativity Training on Learning Disabled Students' Creative Thinking Abilities and Problem-Solving Skills

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The Impact of Creativity Training On Learning Disabled Students' Creative Thinking Abilities and Problem-Solving Skills

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For many years, special educators have concentrated on developing and implementing instructional programs for learning disabled children (Hammill and Bartel, 1978). Traditionally, program procedures have involved analyzing the learner's characteristics and writing and implementing an instructional prescription. The prescription is often written for the purposes of increasing academic strengths while simultaneously reducing observed deficits (Lerner, 1976). However, after the prescription has been written and implementation has begun, much of the instructional effort is focused upon reducing observed deficits.

The extension of services to the secondary level has provided an opportunity to observe the characteristics that identify learning disabled adolescents. Drake and Cavanaugh (1970) have identified these characteristics as: (a) low ego status, (b) paralysis of effort, (c) supersensitivity to external clues, (d) time panic, and (e) ambivalence over intelligence and dependency. Services

delivered to the learning disabled cannot be held totally responsible for these behaviors; many variables have contributed to these negative characteristics. However, a close analysis of each trait indicates that too much over-emphasis upon negative aspects, i.e., focusing on weakness as contrasted to strengths would encourage these characteristics to develop. The authors proposed that, with the emergence of negative traits in learning disabled adolescents, professional special educators should consider these principles in programming:

1. Remedial techniques alone do not meet the demands made on learning disabled students.

2. Learning disabled students need to develop skills that would enable them to cope with both academic and personal problems.

3. Additional instructional strategies that would enable students to become more independent, self-directed, and consequently, more successful, need to be implemented.

Creativity instruction provides a positive approach to learning. Creativity is a learning strategy that involves helping children learn "how to think," not "what to think." Torrance (1972) maintained that, in varying degrees, creativity can be stimulated in all individuals. The structure and implementation of creative learning activities may therefore enhance several skills important for learning disabled students. For example, creative thinking activities are commonly designed to develop independent and self-directed skills in the students. These activities also include emphasis upon the divergent thinking dimensions of fluency, flexibility, and originality. In addition, creativity instruction contributes to the acquisition of problem-solving skills, yet another component of creative learning (Feldhusen and Treffinger, 1977).

The learning disabilities field has borrowed instructional techniques from different areas to formulate an eclectic approach to teaching. Creativity instruction, a learning strategy used extensively in gifted education (Feldhusen and Treffinger, 1977), is designed to develop independent and self-directed behaviors that could offset the negative characteristics that identify learning disabled adolescents. The need to find learning strategies to enable learning disabled students to cope with academic and personal problems provided a general background and impetus for the present investigation. However, as a first step, the extent to which students with learning disabilities could profit from creativity instruction was investigated.

Therefore, the basic purpose of this study was to investigate the impact of participation in a creativity instructional program on measures of creative thinking and problem-solving. Two specific research questions evolved from the purpose; they were:

1. Do children who have participated in the Purdue Creative Thinking Program attain greater scores on creative thinking tests than children who have not participated in the training program?

2. Do the effects of the creativity instructional program extend to a problem-solving task?

Methods and Procedures

Subjects. Forty-nine subjects were randomly assigned to a learning disabled experimental group, and to a learning disabled control group. All learning disabled students were enrolled in an intermediate level learning disabilities self-contained classroom. A normal control group of 24 subjects was randomly selected in proportion to the sex and grade level of the two learning disabilities groups.

Instructional Program. The Purdue Creative Training Program (Feldhusen, Treffinger, and Bahlke, 1970) was used as the independent variable. This program consisted of 28 audio tapes and exercises designed to train divergent thinking abilities of figural and verbal fluency, elaboration, originality, and flexibility.

Procedure. Before instruction with the creativity training program, all pupils were given the Torrance Tests of Creative Thinking (TTCT) (Torrance, 1974), Form A. The following subtests were used: Just Suppose, Product Improvement, Unusual Uses, Parallel Lines, and Picture Completion. The tests were administered using standard directions described by Torrance.

The creativity training program was administered at the rate of two 45-minute lessons per week for 14 weeks. Within the week after instruction ended, the TTCT, Form B, was administered to measure the divergent thinking abilities of all subjects. A clinical problem-solving task developed by Jaben (1979) measured the effectiveness of creativity training to extend to problem-solving skills.

Analysis of the data. Analysis of covariance procedures were applied to the data. The posttest TTCT scores were used as the dependent variables, and TTCT pretest scores were used as covariates. The alpha level was set at .05 for all tests of differences among and between groups. Separate analyses were conducted for each of six subscores: verbal and figural fluency, verbal and figural flexibility, and verbal and figural originality. The problem-solving task scores were analyzed with an analysis of variance design. The Scheffee procedure (Winer, 1962) was used for post hoc tests when a significant F was observed.

Results. Analysis of the verbal fluency, verbal flexibility, and total verbal creativity posttest scores revealed the learning disabled experimental group to be

significantly higher ($p < .001$) from the learning disabled control and normal control groups. Analysis of the creativity variables of originality on the verbal posttest scores and the total verbal and figural posttest scores indicated the mean of the learning disabled experimental group to be significantly higher ($p < .05$) from the two control groups.

The three groups' posttest scores did not differ significantly for the creativity variables on the figural subtest of the TTCT.

Inspection of the problem-solving task fluency posttest data identified the mean for the learning disabled experimental group to be significantly higher ($p < .001$) from the mean for the two control groups. Analysis of the problem-solving task dichotomy posttest scores disclosed the learning disabled experimental group to be significantly higher ($p < .05$) from the learning disabled control group. On the problem-solving task dichotomy the normal control group mean was not significantly different from the two learning disabled group means. Analysis of the problem-solving task total posttest scores revealed the mean for the learning disabled experimental group to be significantly higher ($p < .001$) from the learning disabled control group and normal control group.

Conclusions and Implications. The first question asked in this research was: "Will learning disabled children who participate in the Purdue Creativity Training Program perform at higher levels on creativity tests compared to children, learning disabled and normal, who have not participated?" The clear-cut answer is possible for the verbal subtests. Learning disabled students who participated in the creativity training program did perform at levels high enough to be significantly higher from children who did not participate in the program. Language deficits and verbal problems are characteristics of the learning disabled population.

The training program, a language oriented program, was most effective in training the creative thinking of the learning disabled experimental group on the TTCT verbal subtests. However, for this learning disabled population, the training program was not successful in stimulating creative behavior as measured by the figural subtests.

The second question was: "Do the effects of creativity training influence scores on a problem-solving task?" The answer to this question is affirmative. The learning disabled subjects who received creative training also performed at significantly higher levels on the problem-solving task. Thus, the results of this study indicated that creative training, a learning strategy borrowed from the gifted area, significantly enhanced the divergent or creative thinking abilities as measured on the verbal subtests. The training was also effective in significantly influencing problem-solving skills of the learning disabled experimental group.

Implications for future research involves both the affective and cognitive domains.

1. Longitudinal studies should be conducted to examine the efficacy of creative training to develop independent, self-directed behaviors in the learning disabled population. Creativity training could provide the learning disabled population with another option. In addition to receiving training in convergent thinking, which is presently what most academic materials are developed to train, the learning disabled should now be taught to think divergently. Divergent thinking is not systematically taught in the regular classroom. Therefore, programming procedures which include both convergent and divergent training could increase the chance of success for the learning disabled.

2. The relationship between creative training and on-the-job performance of the learning disabled population needs to be established.

3. Research needs to be conducted to examine the relationship between creativity training and personal adjustment and self-concepts of learning disabled students.

4. Studies need to be conducted to establish the efficacy of creative training to extend to different problem-solving criteria.

5. Integration of creativity training with other classroom instructional programs should be examined.

6. Future research could be focused upon examining the relationship between creativity training and academic achievement.

7. Research should be directed toward the investigation of creativity training as a method to develop language behavior.

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